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29 November 1961

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MEMORANDUM FOR : [redacted]
Pratt & Whitney Aircraft Division
United Aircraft Corporation
Hartford, Connecticut

SUBJECT : Relocation - JT11D-20 Engine Development Program

With the advent of the first J58 engine run in December 1957, impressive development progress was made during the subsequent two year period. It is our understanding that:

The first 50 hour endurance test was completed in 1958.

The first Mach 3 sea level demonstration run was made in July 1958.

The first Mach 3 sea level afterburner run was made in October 1958.

The first P-2 engine rating sea level 150 hour endurance test was made in November 1958.

The first heated inlet test stand run was made in December 1958.

The second P-2 engine rating sea level 150 hour endurance test was made in January 1959.

As of December 1959 over 1750 hours of full-scale running time had been accumulated, establishing an average of 73 hours per month.

Since February 1961, it has been apparent that the JT11D-20 engine development program has and continues to suffer from the inability to accumulate sufficient meaningful engine test time. Time accumulation for the 10-1/2 month period from December 1960 to 15 November 1961 is as follows:

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Total engine time: 727 hours at 70 hours per month
(55 hours from 16 October to
15 November)

Afterburner time: 230 hours at 22 hours per month

Hot inlet time: 69 hours at 6.6 hours per month

Hot turbine time: 25 hours at 2.4 hours per month

Time at Mach 3 inlet conditions: 0 hours

While it is acknowledged that engine controls problems have contributed to this inability and notwithstanding the recognized magnitude of the effort, the customer has concluded that this situation is due in part at least to certain inherent shortcomings attributed to the remoteness of the Florida Research and Development Center. It is felt that these shortcomings by their inherent and chronic nature have and will continue to contribute to this deficiency and have and will contribute to increased development and prototype costs. Since the contractor's original estimate of September 1959, requests for substantial amounts of additional funding were made in August 1960 and again in May 1961. Initial engine deliveries recently were delayed several months because of insufficient development progress. In addition, the recent reorganization of the Florida Research and Development Center undertaken by the contractor attests to the existence of these and other shortcomings. It is the customer's impression, stemming from the apparent inability to accumulate meaningful engine test time, that these shortcomings are:

Factory personnel inexperience particularly in the area of experimental engine assembly.

Questionable quality and/or quantity of first line assembly supervision.

Deficiency in numbers particularly of experimental engine assembly personnel for handling periods of unanticipated peak load. Manpower flexibility for handling these peak loads is apparently lacking due to the size and geography of the Florida facility.

Difficulty experienced in moving appropriate factory personnel to Florida from Hartford because of personal inconvenience, incentive, and union restrictions.

Geographical remoteness of the effort relative to monitoring and control of vendor technical problems.

Geographical remoteness from much small shop vendor capacity centered in New England useful in affording flexibility in manufacturing operations.

Geographical decentralization of procurement relative to vendor costs and incentive for cost reduction.

Geographical remoteness of the effort relative to top management communication and control.

During early discussions in 1959 concerning implementation of the JT11D-20 engine development effort, this customer was advised by the contractor of the desirability of utilizing the Florida Research and Development Center for development and manufacture of prototype engines. During 1960, however, it became apparent to the contractor that the undertaking of both development and production efforts under the same basically experimental organization and at the Florida location was not feasible. A decision, therefore, was made and implemented by the contractor that the production effort be returned to Hartford in order to eliminate some or all of the shortcomings cited above.

In order that the present engine development situation be improved, it is felt in keeping with the best interest of the United States Government, that careful consideration by the contractor must be given to the feasibility of moving the primary development effort in addition to the prototype program to Hartford at some optimum date in the not far distant future. It is the customer's feeling that Hartford is the centralized focal point of Pratt & Whitney's and the United Aircraft Corporation's activity in terms of engineering and production experience, facilities, experienced manpower, and manpower flexibility and therefore is in position to overcome the existing deficiencies of the remote Florida development effort. Further, since the overhaul of prototype engines will be concentrated in the Hartford area, it would appear desirable in terms of communication to have the development effort nearby. Concerning the contingency of existing Florida test facility capacity, consideration might be given to the retention of this capacity utilizing engine airlift commutation between Hartford and Florida. The fact that the JT11D-20 engine development is believed to reflect a continuing effort points up the advisability of a timely decision to relocate in order to utilize most efficiently the contractor's capability at Hartford, which it is

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believed, will become more available as existing programs are completed or reduced in scope. As an interim measure, it is expected that every effort is being and will be made to correct the current assembly floor situation in Florida.

The contractor's timely comments concerning the feasibility of relocating the primary D-20 development effort to Hartford in view of the foregoing are specifically requested.

In view of increasing national and international emphasis on high Mach number manned flight, it must be clearly understood that this customer as part of the defense community is obligated to examine and re-examine all avenues leading toward the expeditious and economic realization of this goal. In this regard, the contractor's progress and performance must be and is reappraised continuously in relation to the progress achieved by competitive programs.

RICHARD M. BISSELL, JR.

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(20 Nov 1961)

SIGNATURE Recommended:

(signed)

STANLEY W. BEERLI
Colonel USAF
Acting Chief, DPD

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